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AUTHOR	Simon-Boyd, Gail D.; Bieschke, Kathleen J.
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ABSTRACT

This study examined relationships between hardiness, college adjustment (academic adjustment, social adjustment, personal-emotional adjustment, institutional attachment) and eating disorder (ED) continuum categories in 122 female and 20 male college students. Students who exhibited a higher level of personal-emotional adjustment (PEA) to college reported less disordered eating and greater hardiness. As hypothesized, PEA significantly predicted ED category (asymptomatic, symptomatic, eating disordered) for females, and overall college adjustment significantly predicted ED category for a combined sub-sample of 20 females and 20 males. (Contains 66 references and 4 tables.) (Author)

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Running head: EATING DISORDER CONTINUUM

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Predicting Eating Disorder Continuum Groups: Hardiness and College Adjustment

Gail D. Simon-Boyd, Ph.D. and Kathleen J. Bieschke, Ph.D.

The Pennsylvania State University

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Poster presented on August 7, 2003, at the Annual Convention of the American Psychological Association, Toronto, Canada. Correspondence regarding this paper should be addressed to Gail Simon-Boyd, Stoney Brook Counseling Center, 2 Courthouse Lane, Suite 3, Chelmsford, MA 01824. Electronic mail may be sent to gail_simon2000@yahoo.com.

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Abstract

This study examined relationships between hardiness, college adjustment (academic adjustment, social adjustment, personal-emotional adjustment, institutional attachment) and eating disorder (ED) continuum categories in 122 female and 20 male college students. Students who exhibited a higher level of personal-emotional adjustment (PEA) to college reported less disordered eating and greater hardiness. As hypothesized, PEA significantly predicted ED category (asymptomatic, symptomatic, eating disordered) for females, and overall college adjustment significantly predicted ED category for a combined sub-sample of 20 females and 20 males.

Predicting Eating Disorder Continuum Groups: Hardiness and College Adjustment

Over the past two decades there has been increased recognition among the psychology community and society at large of the growing prevalence of eating disorders. Particular concern has been expressed for adolescent women and the high percentage of college students affected by this issue (e.g., Kalodner & Scarano, 1992; Kashubeck et al., 1994; Klemchuk, Hutchinson, & Frank, 1990). For example, the reported prevalence of Anorexia Nervosa (AN) in college populations has ranged from 6-25%, while the incidence of Bulimia Nervosa (BN) has been between 1 and 19%, and binge-eating among college women reportedly ranges from 23-85% (e.g., Hesse-Biber & Marino, 1991; Mintz & Betz, 1988).

This heightened awareness has stimulated an expansion of research into three important new directions. The first involves conceptualization of disordered eating attitudes and behaviors along a continuum, with normal eating at one end and diagnoses of AN, BN, and Eating Disorder Not Otherwise Specified (EDNOS) at the other (e.g., Mintz, O'Halloran, Mulholland, & Schneider, 1997; Mulholland & Mintz, 2001; Tylka & Subich, 1999). Second, investigators are turning a critical eye to sociocultural influences, particularly in the college environment, which could be detrimental and contribute to the development of disordered eating. Typical emphases of the college environment on such factors as academic achievement, competition, and attractiveness have been hypothesized to influence the development and maintenance of disordered eating in vulnerable students (e.g., Connor-Greene, Striegel-Moore, & Cronan, 1994; Crandall, 1988; Petrie, 1993). Lastly, researchers are advocating a shift from the more traditional focus on risk factors to potential protective mechanisms that enable some individuals to withstand external pressures and maintain healthy eating and a positive body image (e.g., Kashubeck, Walsh, & Crowl, 1994; Martz, Handley, & Eisler, 1995; Williams, Chamove, & Millar, 1990). Empirical endeavors in these relatively uncharted areas could improve much needed clinical intervention and prevention services for college students across the country.

Eating Disorder Continuum

The eating disorder continuum includes subclinical variations of disordered eating, and can thus capture issues of clinical importance in a broader client population that includes men and individuals of diverse ethnic and sexual orientation backgrounds (e.g., Mulholland & Mintz, 2001; Tylka & Subich, 2002). Such individuals might not meet diagnostic criteria for AN, BN, or even EDNOS yet may still exhibit symptoms of concern that could be improved upon through more appropriately focused clinical interventions. This new conceptualization highlights an important segment of the college population that was overlooked by previous dichotomous classification in eating disorders research. Investigators' various attempts to capture the eating disorder continuum construct initially resulted in a somewhat confusing array of instruments and category labels that have been used inconsistently and tend to hinder comparison across existing studies. For example, the Eating Disorder Inventory (EDI; Garner, Olmsted, & Polivy, 1983) has often been broken down into its component subscales, which seemed to be selected arbitrarily for use in different studies to define the "core" eating disorder

attitudes and behaviors. Additionally, investigators have used a range of 3-7 categories, with different labels across studies, to define the continuum (Hesse-Biber, 1989; Katzman & Wolchik, 1984; Mintz & Betz, 1988; Petrie, 1993). This measurement issue has recently been resolved, with the introduction of a promising DSM-IV operationalized continuum measure, the Questionnaire for Eating Disorder Diagnoses (Q-EDD; Mintz, O'Halloran, Mulholland, & Schneider, 1997).

Many theories exist that attempt to elucidate the etiology of eating disorders. These have tended to focus on factors that exist either within the individual (e.g., depression) or in one's surrounding environment (e.g., media images). The more comprehensive theories represent a combination of both aspects of influence, focusing more on the person-environment interaction (e.g., Pliner & Haddock, 1996; Stice & Shaw, 1994). Concern has been raised about American society's portrayal of an ideal female body shape, which has grown increasingly thinner over time (Garner, Garfinkel, Schwartz, & Thompson, 1980; Wiseman, Gray, Mosimann, & Ahrens, 1992). The effects of the diet and body-building industries' recommendations for men's body shapes has received relatively little empirical attention but may also significantly influence disordered eating patterns. It is theorized that internalization of this ideal leads to self-objectification and body dissatisfaction, along with feelings of anxiety and shame (Fredrickson & Roberts, 1997; Noll & Fredrickson, 1998).

College Adjustment

Such sociocultural mandates for attractiveness and social acceptance might be magnified within the college microcosm, where various academic, social, and emotional pressures are compounded in a semi-closed atmosphere. The college years can be an extremely turbulent developmental transition for young adults, and the required tasks of separation/individuation from parents and formation of new individual and group identities can have special implications for the development of disordered eating (Dickstein, 1989; Emmett, 1989; Hirsch, 1993). Furthermore, once students adapt to the demands of college life, they must then negotiate the career planning process and transition to a future characterized by even greater autonomy and responsibility. During this stressful transition period, women can experience significant losses in self-confidence, assertiveness, and overall self concept (Hesse-Biber & Marino, 1991). The running research trend seems to involve the identification of college women with disordered eating, and subsequent observation of correlations with sorority/athletic team membership, engaging in alcoholic bingeing/purging, and living on co-ed dormitory floors (Berg, 1988; Crandall, 1988; Meilman, vonHippel, & Gaylor, 1991; Petrie, 1993).

However, most individuals, despite exposure to such influences and stressors, do not develop disordered eating. It is this inquiry into protective psychological mechanisms that might mediate the development of disordered eating that drives the present study. Some investigators have emphasized gender and sexual orientation as potential mediators, as heterosexual men and lesbians appear to possess more positive body images and demonstrate less susceptibility to cultural pressures to be thin (e.g., Siever, 1994; Snyder & Hasbrouck, 1996). While mediational research in the eating disorders literature is progressing, none of the variables identified thus far have been able to account for a large amount of the variance in disordered eating among college students. As such, there may be psychological variables that exert an underlying

influence in protecting individuals, regardless of gender and sexual orientation, from developing disordered eating. Psychological hardiness has been identified as such a characteristic, in that it represents a positive life outlook that helps individuals to cope with stressors.

Hardiness

Hardy individuals exhibit high levels of three component characteristics: commitment, a tendency to be actively involved in life endeavors; control, a sense that one is generally in charge of one's own destiny; and challenge, the view that changes represent exciting growth opportunities. These qualities are hypothesized to have both direct and indirect influences on individuals' physical and mental health, by minimizing psychological strain (Kobasa, 1979; Kobasa, Maddi, & Kahn, 1982; Kobasa & Puccetti, 1983) and encouraging social support seeking (Bartone, Ursano, Wright, & Ingraham, 1989; Florian, Mikulincer, & Taubman, 1995; Gill & Harris, 1991), more effective coping methods (Hull, VanTreuren, & Propsom, 1988; Sansone, Wiebe, & Morgan, 1999), and better health practices (Nagy & Nix, 1989).

Originally studied in male business executives, hardiness has been examined in increasingly diverse samples including military personnel, women, and college students. Hardiness has demonstrated a direct relationship to depressive and anxiety symptoms in individuals coping with a variety of stressful situations (Feinauer, Mitchell, Harper, & Dane, 1996; Gill & Harris, 1991; Nowack, 1989) and to college students' adjustment (Mathis & Lecci, 1999). Furthermore, some research has shown that hardiness can mediate the potentially harmful influence of environmental stressors such as parental alcoholism on the psychological well-being of college students (Robitschek & Kashubeck, 1999). Such findings identify hardiness as an important variable to explore, in terms of both direct and indirect effects on college students' disordered eating, in relation to their adjustment to the stressful college environment.

The measurement of hardiness has been criticized over the years for instruments with poor psychometric properties, doubts about the validity of the overall construct and its three components, and whether its relationship to health is direct or indirect (e.g., Benishek, 1996; Funk, 1992). Fortunately, recent revisions have generated improvements in all of these areas of concern. The Dispositional Resilience Scale (DRS; Bartone, 1999; Bartone et al., 1989) currently represents the most psychometrically sound instrument available for the measurement of hardiness.

Relationships Among Study Variables

To date, studies have looked at the relationship between disordered eating and college-related stressors (e.g., Hesse-Biber & Marino, 1991), between hardiness and adjustment to college-related stressors (e.g., Mathis & Lecci, 1999), and between disordered eating and hardiness (Shepperd & Kashani, 1991). Although a theoretical interaction among all three variables has often been alluded to, this has not yet been explored empirically. As such, it was the intent of the present study to examine the relationship of hardiness and students' college adjustment to disordered eating. Individuals with disordered eating tend to utilize less effective methods for coping with stress, and their eating behaviors may represent attempts to exert greater personal control over their environments (e.g., Hansel & Wittrock, 1997; Troop, Holbrey, & Treasure,

1998). If college stressors influence disordered eating, and hardiness allows for better coping and adjustment to college, then individuals who possess this psychological characteristic should engage in less disordered eating.

Statement of the Problem

This study examines two variables—hardiness (as measured by commitment, control, and challenge), and adjustment to college (as measured by academic adjustment, social adjustment, personal-emotional adjustment, and goal commitment/institutional attachment)—that may predict college students' classification into one of three categories along the eating disorder continuum (asymptomatic, symptomatic, and eating disordered). It is hypothesized that hardiness and college adjustment will be inversely related to disordered eating, and that hardiness will be directly related to college adjustment. It is also hypothesized that hardiness can predict eating disorder continuum group classification, such that individuals higher in hardiness will be classified into healthier eating categories. Specifically, asymptomatic individuals will demonstrate higher hardiness than individuals in symptomatic and eating disordered groups, and symptomatic individuals will demonstrate higher hardiness than individuals in eating disordered groups. Additionally, it is hypothesized that college adjustment can predict eating disorder continuum group classification, such that individuals whose scores indicate higher levels of adjustment will be classified into healthier eating categories. Specifically, asymptomatic individuals will demonstrate higher college adjustment than individuals in symptomatic and eating disordered groups, and symptomatic individuals will demonstrate higher college adjustment than individuals in eating disordered groups. Finally, it is hypothesized that hardiness serves as a mediating variable between college adjustment and disordered eating, such that the ability of adjustment level to accurately predict eating disorder continuum group classification is directly influenced by hardiness.

Method

Participants

Participants were 142 undergraduate students (86% female, 14% male) enrolled at a large mid-Atlantic university. Average age was 21 years (SD = 1.23). Eighty-eight percent of the sample was Caucasian; 6.3% was African-American; and 5.6% represented other ethnic backgrounds. A majority of the sample consisted of students beyond their first year in school (95%), who identified as heterosexual (97.9%), non-athletes (97.9%), non-members of Greek organizations (84.5%), and who had not participated in therapy for disordered eating concerns (84.5%). Of the 15.5% who reported participating in therapy for disordered eating concerns, 59% stated they were currently in therapy for these issues, 13.6% knew of family members who were treated for these issues, and their average length of time in therapy for these issues was 8.6 months (SD = 9.5).

Procedure

Data was collected by survey method from three types of samples: classroom students who received extra-credit compensation (n = 90), classroom students who could receive a campus bookstore gift certificate as compensation (n = 35), and students in therapy at three campus/community counseling centers (n = 17). As it was anticipated that therapy clients might demonstrate more disordered eating than the general student

population, their inclusion was expected to enhance sampling diversity along the ED continuum. Data from each of these samples was combined for analysis.

In addition to the informed consent forms and compensation slips, each packet of measures contained the four self-report paper and pencil survey instruments. The demographics form was presented first, followed by each of the three measures presented randomly to control for order effects. Confidentiality provisions, including numerical participant coding on all measures and stamped, addressed envelopes for the clinical sample, were explained.

Measures

Demographic Questionnaire. Demographic information was collected with a one-page questionnaire that included questions regarding age, race/ethnicity, gender, sexual orientation, year in school, Greek system affiliation, and athletic team affiliation. Participants were also asked to indicate whether they were currently receiving or have ever received treatment (e.g., psychotherapy, medication) for disordered eating, duration of such treatment, and whether family members have received such treatment.

The Questionnaire for Eating Disorder Diagnoses (Q-EDD; Mintz, O'Halloran, Mulholland, & Schneider, 1997) is a 50-item inventory that utilizes DSM-IV criteria to operationally define and classify individuals into ED continuum categories. Respondents answer questions about the presence, frequency, duration and intensity of disordered eating attitudes and behaviors, both dichotomously ("yes/no") and by using scales ranging from "daily" to "once/month," "1 month" to "more than a year," and "not at all" to "extremely or completely." Mintz et al. (1997) obtained empirical support for the convergent, incremental, and criterion validity of the Q-EDD, and reported test-retest reliability of .85 for two weeks and .54 over a period of one to three months for the distinction between eating disordered, symptomatic, and asymptomatic individuals.

Dispositional Resilience Scale-Short Form (DRS; Bartone, 1999) is a 15-item instrument designed to measure psychological hardiness, which reflects how individuals perceive and attribute meaning to life experiences. Items are answered on a four-point Likert scale ranging from "not at all true" (0) to "completely true" (3). Bartone (1999) reported internal consistency at .82 for the overall measure and .77, .68, and .69 for the three subscales of Commitment, Control, and Challenge, respectively. Three-week test-retest reliability was reported at .78, and principal components factor analyses supported the validity of the three-facet hardiness model (Bartone, 1999; Bartone, Ursano, Wright, & Ingraham, 1989).

Student Adaptation to College Questionnaire (SACQ; Baker & Siryk, 1989) is a 67-item inventory designed to assess undergraduate students' coping responses to college-related stressors along four subscales: academic adjustment, social adjustment, personal-emotional adjustment, and institutional attachment. Items are answered on a nine-point Likert scale anchored by "applies very closely to me" and "doesn't apply to me at all." Values between 1 and 9 are assigned to points on a continuum ranging from less adaptive to more adaptive adjustment, respectively, and are reverse-scored for positively keyed items. Raw scores are converted to T-scores, based on a normative sample of university students stratified by gender and semester, allowing for comparison across students of different semester standings. Baker & Siryk (1989) reported internal consistency at .89-.95 for the Full Scale, .78-.90 for Academic Adjustment, .73-.91 for

Social Adjustment, .73-.89 for Personal-Emotional Adjustment, and .81-.91 for Institutional Attachment. Support for the validity of the SACQ, from principal-components analyses and maximum likelihood tests, was reviewed by Bieschke (1994).

Results

Prior to statistical analysis, data were screened for accuracy of entry, missing values, and fit with the assumptions of multivariate analysis. Contingency tables and chi-square analyses were used to establish the appropriateness of combining the three sample types for further analysis. This total sample (N = 142) was separated by gender for statistical analysis, however, due to the large difference in number of female (122) and male (20) participants as well as unequal number of levels of ED category outcome (45% of females were classified as asymptomatic, 40% as symptomatic, and 15% as eating disordered; 85% of males were asymptomatic, 15% symptomatic). A combined sub-sample, including 17 asymptomatic females and 3 symptomatic females with the 20 males, was used to examine the ability of the main predictor variables of interest (hardiness and adjustment to college) to predict ED category without the potential confounding influence of gender. In evaluations of internal consistency, SACQ subscales and overall scale as well as the DRS overall scale were deemed appropriate for use in further analyses. Table 1 shows the means, standard deviations, and Cronbach's alpha coefficients for the predictor variables.

Personal-emotional adjustment to college was expected to be inversely related to disordered eating. Results supported this hypothesis, as the correlation between personal-emotional adjustment and disordered eating was statistically significant for females (r = -.37, p < .001), males (r = -.44, p < .05), and the combined sub-sample (r = -.36, p < .05). It was predicted that hardiness would be directly related to the four components of adjustment to college. For females, results showed a significant direct relationship between hardiness and academic adjustment (r = .25, p < .01), social adjustment (r = .44, p < .001), personal-emotional adjustment (r = .32, p < .001), and institutional attachment (r = .33, p < .001). For males, results showed a significant direct relationship between hardiness and personal-emotional adjustment (r = .57, p < .01), and institutional attachment (r = .50, p < .05). For the combined sub-sample, results showed a significant direct relationship between hardiness and social adjustment (r = .32, p < .05), personal-emotional adjustment (r = .50, p < .001), and institutional attachment (r = .40, p < .01). Correlation matrices for the female and combined sub-samples are displayed in Tables 2 and 3, respectively.

Direct logistic regression analyses were performed on ED category as outcome, simultaneously assessing hardiness and college adjustment, represented by one predictor in the combined sub-sample of 20 males and 20 females (n = 40) and four continuous predictors of academic adjustment, social adjustment, personal-emotional adjustment, and institutional attachment in the female sub-sample (n = 122). Table 4 displays the results of logistic regression analyses for the female and combined sub-samples.

A small amount of variance in ED status was accounted for by the set of predictors, R^2 = .17, in the female sub-sample. According to the Wald criterion, only personal-emotional adjustment significantly predicted eating disorder category, χ^2 (1, n = 122) = 13.19, p < .001, in the female sub-sample. Higher personal-emotional adjustment scores were significantly related to less severely disordered eating. Specifically, for

females, the odds of being in a healthier eating category (asymptomatic versus symptomatic and eating disordered, symptomatic versus eating disordered) are 2.25 times higher for each additional ten points (one standard deviation) of personal-emotional adjustment (PEA) T-score. If a female college student's PEA T-score increases by 20 points, she is 5.06 times more likely to belong to a healthier eating category.

For the combined sub-sample, overall adjustment to college significantly predicted ED category, χ^2 (1, n = 40) = 3.89, $p < .05$. Higher adjustment scores were significantly related to categories of less severely disordered eating. Specifically, the odds of being in healthier eating category (asymptomatic versus symptomatic) are 4.26 times higher for each additional ten points of overall college adjustment T-score. Within this sub-sample, if a female or male college student's overall college adjustment T-score increases by 20 points, s/he is 18.17 times more likely to belong to a healthier eating category.

Discussion

The aim of this study was to investigate whether hardiness and college adjustment could predict students' membership in groups (asymptomatic, symptomatic, eating disordered) along the eating disorder continuum. Results of correlational and logistic regression analyses lend partial support to the proposed hypotheses. Although hardiness and three of four components of college adjustment did not demonstrate an ability to predict ED category membership along the asymptomatic-symptomatic-eating disordered continuum, personal-emotional adjustment to college was identified as a significant predictor of ED category, identifying this issue as an important focus for prevention and intervention efforts with college students.

The only component of college adjustment found to be statistically significantly related to disordered eating in the predicted manner was personal-emotional adjustment. A moderate negative correlation was observed in the female, male, and combined sub-samples (rs = -.37, -.44, and -.36, respectively). Prior research on college adjustment lends mixed support to this finding. While earlier studies did not specifically examine disordered eating in relation to college adjustment, results demonstrated correlations between personal-emotional adjustment to college and various issues that have been linked to disordered eating in the research literature: self esteem (Mooney et al., 1991); emotional stability, social support, and daily stressors (Brooks & DuBois, 1995); authoritative parenting styles and perceived reciprocity in relationships with parents (Wintre & Sugar, 2000); and positive attachment relationships with parents (Kenny & Donaldson, 1992; Lapsley et al., 1989; Lopez, 1991). Such results appear to support the significant relationship between personal-emotional adjustment to college and disordered eating that was observed in the present study. Individuals who are adjusting well to college on a personal-emotional level engage in healthier eating behaviors than those low in personal-emotional adjustment. Perhaps this successful adjustment and healthier eating is related to higher self esteem and the positive family-of-origin relationships noted above. Future research that includes measures of these other variables with college adjustment and disordered eating could further examine such a potential relationship.

The finding that personal-emotional adjustment to college significantly predicts disordered eating for women in the present study is consistent with prior research linking disordered eating with less effective (e.g., involving greater emotional orientation and self-blame) coping styles. Investigators who found a significant relationship between the

two variables have suggested that disordered eating may be used by some individuals to cope with negative affect and experience greater control over stressful situations (Fryer et al., 1997; Hansel & Wittrock, 1997; Koff & Sangani, 1997; Troop et al., 1994; Troop et al., 1998). Williams et al. (1990) also suggested a link between perceived personal control and disordered eating, after discovering a significant relationship between eating disorder symptoms and low assertiveness, external locus-of-control, and perceptions of one's family of origin as controlling. It was proposed that individuals with disordered eating may perceive themselves as less in-control of their feelings, behaviors, and social situations. The significant predictive relationship between personal-emotional college adjustment and disordered eating observed in the current study appears to support this idea.

Theoretical and Practical Implications

One variable that appears to distinguish those students with healthier eating attitudes and behaviors from those with subclinical and clinical disordered eating is their level of personal-emotional adjustment to college. These students who appear to be more successfully negotiating their acclimation to the college environment on a psychological level exhibit an ability to maintain healthier eating habits and a more positive body image. It is possible that they have chosen methods of coping with college-specific stressors (e.g., increased personal responsibility, education-related expenses) that individuals with disordered eating are either not aware of or less able to access. Therefore, this could be an important issue to focus on in clinical prevention and intervention efforts on college campuses. It is possible that assisting students with their personal-emotional adjustment to college (e.g., by empowering them to feel more in-control of environmental stressors) could help them to maintain healthier eating attitudes and behaviors. This is important for a variety of college personnel to keep in mind, as instructors, academic advisors, religious leaders, dormitory resident advisors, and staff psychologists at campus counseling centers all have the potential to influence students' college adjustment. Continued and improved efforts in orientation, mentoring, and other outreach programs on college campuses may thus have the power to indirectly influence healthy eating behaviors, combating the prevalent negative societal messages developing adults may face on a daily basis from the media and other external sources (e.g., peers, family members).

In order for college-based and other counseling professionals to make a significant positive impact on these interacting issues, it is important for therapists to be properly trained and informed about the continuum conceptualization of disordered eating. This will enable them to recognize a broader range of symptoms in a larger population of students, including men (Petrie & Rogers, 2001). While only 12.7% of the overall sample in the current study was classified as eating disordered, a significant proportion (36.6%) was identified as symptomatic, supporting the importance of conceptualizing disordered eating along a continuum. Armed with this broader perspective, counseling psychologists can be better prepared to assist such individuals, particularly males, who are neglected by earlier dichotomous classification. Recent literature in the eating disorders field presents recommendations for psychology graduate programs to incorporate the continuum theory into training in eating disorders work, in terms of helping future counselors better understand etiology, assessment, treatment, and

research issues in the area (Hotelling, 2001). While such training could be integrated in practicum and theory courses, it is also important to continue to expand clinicians' knowledge base at the internship and senior staff levels, through supervision, group seminars, and in-service programming.

Study Limitations

One of the main limitations of this study is sample size and lack of diversity in demographics, especially gender. The sample consisted mainly of Caucasian heterosexual women who were not members of Greek organizations or athletic teams. More research is needed to determine if the results of the current study could be replicated and applied to men and college students of greater ethnic and sexual orientation diversity. The generalizability of the results of this study may also be influenced by the campus atmosphere at this particular large public university, with its emphasis on academic prestige, athletic success, and socializing which tends to focus on athletic events, Greek organizations, and alcohol use (The Pennsylvania State University, Student Affairs, 2000, May 2001, October 2001). A third limitation of the study involves the survey instruments used. All measures involved self-report and thus were vulnerable to social desirability bias. Due to the fairly transparent purpose of the instruments, it is possible that participants on the whole presented an inflated estimation of their true hardiness and college adjustment, and potentially minimized the severity of their disordered eating. Additionally, the Q-EDD is vulnerable to recall bias, and both the Q-EDD and DRS are fairly new measures that could benefit from further validation in additional research.

Recommendations for Future Research

A variety of ideas for future research are suggested by the current study, to help clarify the observed relationship between disordered eating and personal-emotional adjustment to college. For example, prospective study methods could prove useful in examining students' personal-emotional adjustment to college over time, to see if changes in students' adjustment level result in movement between categories along the eating disorder continuum. Such investigation could potentially build on prior research such as that of Hesse-Biber and Marino (1991), who found that college women whose eating behavior worsened over time showed a significant decrease in self-ratings of assertiveness, physical attractiveness, and social self-confidence. In a review of available literature on vulnerability and protective factors for BN, Rodin, Striegel-Moore, and Silberstein (1990) call attention to the significant lack of research on individuals who demonstrate resiliency in the context of eating disorder risk factors. With its emphasis on health and prevention, counseling psychology research in the disordered eating field could also benefit from further examination of potential protective mechanisms other than hardiness, such as autonomy, assertiveness, and gender roles, that have been identified in other studies as possible mediators.

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Table 1

Mean Values and Coefficient Alphas of Predictor Variables in Female, Male, and Combined Sub-samples

Variable	Female $n = 122$	Male $n = 20$	Combined $n = 40$	Cronbach's *alpha*
Hardiness				
M	28.28	28.00	27.95	.70
SD	5.17	5.37	4.42	
Range	13-44	16-38	16-38	
Overall CA				
M	412.35	407.15	412.73	.92
SD	60.60	64.48	56.45	
Range	264-565	298-508	298-508	
AA				
M	145.50	136.25	138.78	.85
SD	24.34	25.43	22.51	
Range	82-208	82-185	82-187	
SA				
M	126.84	126.40	128.70	.89
SD	25.51	27.21	25.08	
Range	49-173	63-172	63-172	
PEA				
M	77.80	83.30	82.90	.86
SD	22.24	22.05	19.26	
Range	28-126	51-115	48-115	
IA				
M	105.17	102.40	105.70	.82
SD	15.23	18.83	16.31	
Range	59-132	64-133	64-133	

Note. CA = College Adjustment; AA = Academic Adjustment; SA = Social Adjustment; PEA = Personal-Emotional Adjustment; IA = Institutional Attachment.

Table 2

Intercorrelations Between Model Variables for Female Sub-sample (n = 122)

Variable	1	2	3	4	5	6	7
1. Hardiness	--	.45***	.25**	.44***	.32***	.33***	-.12
2. Overall College Adjustment		--	.75***	.79***	.79***	.75***	-.25**
3. Academic Adjustment			--	.30***	.45***	.36***	-.14
4. Social Adjustment				--	.51***	.86***	-.15
5. Personal-Emotional Adjustment					--	.43***	-.37***
6. Institutional Attachment						--	-.10
7. Eating Disorder Category							--

Note. Eating disorder category coded as 1 = asymptomatic, 2 = symptomatic, 3 = eating disordered.
**$p < .01$. ***$p < .001$.

Table 3

Intercorrelations Between Model Variables for Combined Sub-sample ($n = 40$)

Variable	1	2	3	4	5	6	7
1. Hardiness	--	.43**	.15	.32*	.50***	.40**	-.04
2. Overall College Adjustment		--	.70***	.75***	.79***	.81***	-.34*
3. Academic Adjustment			--	.18	.42**	.35*	-.22
4. Social Adjustment				--	.47**	.87***	-.22
5. Personal-Emotional Adjustment					--	.54***	-.36*
6. Institutional Attachment						--	-.20
7. Eating Disorder Category							--

Note. Eating disorder category coded as 1 = asymptomatic, 2 = symptomatic, 3 = eating disordered.
*$p < .05$. **$p < .01$. ***$p < .001$.

Table 4

Summary of Logistic Regression Analyses Predicting Eating Disorder Category

Variable	*B*	*SE*	Odds Ratio	Wald Statistic
		Females (n = 122)		
Hardiness	0.01	.04	1.01	0.02
AA	0.00	.02	1.00	0.00
SA	0.00	.04	1.00	0.00
PEA	0.08	.02	1.08	13.19***
IA	-.02	.05	0.98	0.12
		Combined (n = 40)		
Hardiness	-.09	.12	0.91	0.55
Overall CA	0.15	.07	1.16	3.89*

Note. AA = Academic Adjustment; SA = Social Adjustment; PEA = Personal-Emotional Adjustment; IA = Institutional Attachment; CA = College Adjustment.
*$p < .05$. ***$p < .001$

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